

CLAIMS

What is claimed is:

1. A configuration device for use configuring a Foundation Fieldbus segment, comprising:
- 5 a processor;
- a memory;
- a first set of routines stored in the memory and adapted to be executed on the processor to perform network configuration changes;
- 10 a second set of routines stored in the memory and adapted to be executed on the processor to perform device configuration changes without making network configuration changes;
- a mode switch which may be switched between a first mode and a second mode; and
- 15 a configuration routine stored in the memory and adapted to be executed on the processor to initiate any of the first set of routines or any of the second set of routines when the mode switch is set to the first mode to thereby configure the network and adapted to initiate any of the second set of routines but not any of the first set of routines when the mode switch is set to the second mode.
2. The configuration device of claim 1, further including a
- 20 communication stack adapted to communicate over the segment using the Fieldbus protocol.
3. The configuration device of claim 2, further including a
- communication routine stored in the memory and adapted to be executed on the processor to establish a communication link with a Fieldbus device on the segment
- 25 without interfering with communication links established with the Fieldbus device by other devices.

4. The configuration device of claim 3, wherein the communication routine includes a first portion that determines virtual communication relationship (VCR) entries available for use in the Fieldbus device and not being used by other devices, a second portion that selects one of the useable VCR entries and a third
5 portion that establishes the communication link using the selected VCR entry.

5. The configuration device of claim 4, wherein the third portion uses a local selector to establish the communication link using the selected VCR entry.

6. The configuration device of claim 5, wherein the communication routine further includes a fourth portion that determines if the communication link using the selected VCR entry is broken and, if so, causes operation of the first, second
10 and third portions of the communication routine to establish a new communication link with the Fieldbus device.

7. The configuration device of claim 4, wherein the second portion is adapted to randomly select one of the useable VCR entries.

8. The configuration device of claim 1, wherein the first set of routines includes at least one of a device tag assigning routine, a device address assigning routine, a function block scheduling routine and a downloading a communication
15 schedule routine.

9. The configuration device of claim 1, wherein the second set of routines includes at least one of a device configuration changing routine, a resource block
20 modifying routine, a transducer block modifying routine, and a function block modifying routine.

10. The configuration device of claim 9, further including a display and a further routine that determines and displays, via the display, configuration information of the Fieldbus device on the segment.

5 11. The configuration device of claim 10, wherein the further routine determines and displays, via the display, a list of the devices currently connected to the segment.

10 12. The configuration device of claim 1, wherein the configuration routine includes an improper mode routine that, when the mode switch is set to the first mode, determines if no device is on the segment and, if no device is on the segment, prevents initiation of any of first set of routines.

15 13. The configuration device of claim 1, wherein the configuration routine includes an improper mode routine that, when the mode switch is set to the first mode, searches a set of specified device addresses associated with host devices on the segment and, if a device is at one of the specified device addresses, warns the user of a possible error.

14. A configuration device for use configuring a Foundation Fieldbus segment having one or more Fieldbus devices communicatively connected thereto, comprising:

- 5 a processor;
- a memory;
- a set of routines stored in the memory and adapted to be executed on the processor to perform device configuration changes to Fieldbus devices;
- a communication stack adapted to communicate on the Fieldbus segment;
- a configuration routine stored in the memory and adapted to be executed on
- 10 the processor to initiate any of the set of routines to configure a Fieldbus device using the communication stack; and
- a communication routine stored in the memory and adapted to be executed on the processor to establish communication with the Fieldbus device without interrupting communications established between the Fieldbus device and other
- 15 devices attached to the Fieldbus segment.

15. The configuration device of claim 14, wherein the communication routine includes a first portion that determines the virtual communication relationship (VCR) entries available for use in the Fieldbus device and not being used by other devices, a second portion that selects one of the useable VCR entries and a third
- 20 portion that establishes a communication link with the Fieldbus device using the selected VCR entry.

16. The configuration device of claim 15, wherein the communication routine further includes a fourth portion that determines if the communication link using the selected VCR entry is broken and, if so, causes operation of the first, second
- 25 and third portions of the communication routine to establish a new communication link with the Fieldbus device.

17. The configuration device of claim 15, wherein the third portion uses a local selector to establish the communication link using the selected VCR entry.

18. The configuration device of claim 15, wherein the second portion is adapted to randomly select one of the useable VCR entries.

5 19. The configuration device of claim 14, wherein the set of routines includes at least one of a device configuration changing routine, a resource block modifying routine, a transducer block modifying routine, and a function block modifying routine.

10 20. The configuration device of claim 14, further including a display and a further routine stored on the memory and adapted to be executed on the processor to determine and display, via the display, configuration information of the Fieldbus device.

21. A configuration system for use in a device having a processor which configures a Foundation Fieldbus segment, comprising:
15 a memory;
a first set of routines stored in the memory and adapted to be executed on the processor to perform network configuration changes;
a second set of routines stored in the memory and adapted to be executed on the processor to perform device configuration changes without making network
20 configuration changes;
a mode setting which may be set to a first mode or to a second mode; and
a configuration routine stored in the memory and adapted to be executed on the processor to initiate any of the first set of routines or the second set of routines when the mode setting is the first mode to thereby configure the network and adapted
25 to initiate any of the second set of routines but not any of the first set of routines when the mode setting is the second mode.

22. The configuration system of claim 21, further including a communication routine stored in the memory and adapted to be executed on the processor to establish communications with a Fieldbus device on the segment without interfering with communication links established with the Fieldbus device by other devices.

23. The configuration system of claim 22, wherein the communication routine includes a first portion that determines the virtual communication relationship (VCR) entries available for use in the Fieldbus device and not being used by other devices, a second portion that selects one of the useable VCR entries and a third portion that establishes a communication link using the selected VCR entry.

24. The configuration system of claim 23, wherein the third portion uses a local selector to establish the communication link using the selected VCR entry.

25. The configuration system of claim 23, wherein the communication routine further includes a fourth portion that determines if the communication link using the selected VCR entry is broken and, if so, causes operation of the first, second and third portions of the communication routine to establish a new communication link with the Fieldbus device.

26. The configuration system of claim 21, wherein the first set of routines includes at least one of a device tag assigning routine, a device address assigning routine, a function block scheduling routine and a downloading a communication schedule routine.

27. The configuration system of claim 21, wherein the second set of routines includes at least one of a device configuration changing routine, a resource block modifying routine, a transducer block modifying routine, and a function block modifying routine.

28. The configuration system of claim 21, wherein the configuration routine includes an improper mode routine that, when the mode setting is the first mode, determines if no device is on the segment and, if no device is on the segment, prevents initiation of any of the routines in the first set of routines.

- 5 29. The configuration system of claim 21, wherein the configuration routine includes an improper mode routine that, when the mode setting is the first mode, searches a set of specified device addresses associated with host devices on the segment and, if a device is at one of the specified device addresses, warns the user of a possible error.

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